

Line A1 Title: Improvements in and relating to karabiners

Line A2

DESCRIPTION

This invention concerns improvements in and relating to snap hooks, also known as karabiners, for use in climbing and other activities requiring connections to be made to ropes, cables and carrying loops for equipment.

Karabiners generally comprise a C-shaped body with its ends curved towards each other and forming a gap closed by a spring loaded gate pivotally mounted on one body end and urged into engagement with the other body end. A barrel or other locking member may be provided either on the gate or the free body end and which is movable, say slidably or along screw threading, to lock the gate in a closed position.

Line A3 When unlocked, the gate of a karabiner is urged closed and a rope or loop can be snapped into the karabiner by pushing it against the gate to open it. Once the rope or loop is in the confines of the C-shaped body, the gate can spring back to its closed position, where it can be locked, if desired.

A karabiner gate is arranged to open inwardly, so that a rope or the like can be easily snapped into the karabiner but when closed the gate engages the free end of the body to prevent the gate opening outwardly of the body. However, there is a risk of the gate opening inwardly if not locked and even if it is locked with a thimble or the like as described above, there is a risk of the thimble failing if too great an inwards force is applied to the gate. If the gate

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opens inadvertently there is, of course, the risk of the rope or the like escaping from the karabiner body. Typically a steel karabiner gate can withstand an inwards push of upto about 10kN.

An object of this invention is to provide an improved karabiner.

According to this invention there is provided a karabiner comprising a generally C-shaped body, with its free ends curved towards each other and forming a gap therebetween, and a gate on one end of the body for closing the gap, the gate having a locking barrel thereon for locking the gate to the other end of the body, the barrel having a greater thickness or strength on its face outward of the body.

The barrel may be slidable along the gate to a locking position where the barrel overlaps the free end of the body with the gate in a closed position. Alternatively, the barrel may be screw threadedly mounted on the gate for movement therewith for locking the gate. The barrel may alternatively be a double locking or triple locking barrel.

Whatever form the barrel movement takes it is desirable for the barrel to have additional thickness of material on the face or side of the barrel that will be outermost when it is in the position of locking the gate in a closed position. The barrel is preferably made of carbon steel but other suitable materials may be used, such as aluminium and stainless steel. Ideally, the barrel is sized and/or made from suitable material such that it can withstand push in forces upto 25kN.

The gate itself may take any suitable form and, for example, may be a substantially solid cylindrical gate or a wire gate of the type shown, for example,

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in our co-pending GB Patent Application No.0019136.1.

This invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a side view of a karabiner according to the invention with its gate open;

Figure 2 shows the karabiner of Figure 1 with the gate closed;

Figure 3 is a perspective view from one end of the karabiner of Figure 1; and

Figure 4 shows the karabiner of Figure 1 from one side and below.

Referring to the accompanying drawings a karabiner 10 comprises a generally C-shaped body 12 having its free ends 14,16 facing each other but leaving a gap 18 therebetween. Pivotaly mounted on one end 14 of the body is a spring-loaded gate 20. At its free end the gate 20 has a slot 22 with a pin 24 across it. The free end 16 of the body has a hook formation 26 that enters the slot 22 when the gate closes with the pin 24 acting as a stop by locating in the hook formation. The spring loading of the gate is arranged to urge the gate to a closed position.

On the gate 18 is a locking barrel 30 that slides along the gate or is screw-threadedly mounted on the gate to move between a first position clear of the free end of the gate so that it can be opened and closed and a second position where it overlaps the engagement position of the gate 18 and the hook formation 26 when the gate is closed. The locking barrel thus prevents the gate from being opened inadvertently.

The barrel 30 is thicker in the region (32) thereof that overlaps the engagement position of the gate and hook on the outside of the karabiner. This additional thickness provides greater strength against inwards forces that might otherwise cause the barrel to fracture or break to the extent that it no longer prevents the gate from opening inwardly, which could allow a rope or the like to escape from the karabiner. It is to be noted that, in spite of the thickness of the barrel as described in one region as shown in Figure 1 of the drawings, the reduction in gate open dimension is minimal compared to a conventional karabiner.

On its opposite side the barrel 30 has longitudinal grooves 34 formed thereon for grip. The shaping of the barrel 30 has the advantage of being easier to grip and operate compared to a conventional circular section barrel.

It will be appreciated that the locking barrels of the type illustrated may be used with other types of karabiner gate, such as wire gates.

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